



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2013-0867; Directorate Identifier 2013-NM-115-AD; Amendment 39-17853; AD 2014-11-03]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 777-200, -200LR, -300, and -300ER series airplanes. This AD was prompted by reports of severe corrosion on bonding jumpers installed on the flight control surfaces. This AD requires repetitive bonding jumper inspections for corrosion, sealant disbond, and insufficient sealant coverage; and corrective actions if necessary. This AD also specifies an optional inspection for corrosion damage of the bonding brackets, and corrective actions if necessary, which would terminate the repetitive inspections. For certain airplanes, this AD requires installing certain bonding jumpers, and replacing single-tabbed brackets with two-tabbed brackets. We are issuing this AD to detect and correct corrosion on bonding jumpers installed on the flight control surfaces, which, in the event of a lightning strike, could damage the actuator control electronics (ACEs) and result in the loss of the ability to command individual flight control surfaces or cause uncommanded motion of individual flight control surfaces.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2013-0867; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Georgios Roussos, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, Seattle Aircraft Certification Office, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6482; fax: 425-917-6590; email: [Georgios.Roussos@faa.gov](mailto:Georgios.Roussos@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 777-200, -200LR, -300, and -300ER series airplanes. The NPRM published in the Federal Register on October 25, 2013 (78 FR 63903). The NPRM was prompted by reports of severe corrosion on bonding jumpers installed on the flight control surfaces. The NPRM proposed to require repetitive bonding jumper inspections for corrosion, sealant disbond, and insufficient sealant coverage; and corrective actions if necessary. The NPRM also specified an optional inspection for corrosion damage of the bonding brackets, and corrective actions if necessary, which would terminate the repetitive inspections. For certain airplanes, the NPRM proposed installing certain bonding jumpers, and replacing single-tabbed brackets with two-tabbed brackets. We are issuing this AD to detect and correct corrosion on bonding jumpers installed on the flight control surfaces, which, in the event of a lightning strike, could damage the ACEs and result in the loss of the ability to command individual flight control surfaces or cause uncommanded motion of individual flight control surfaces.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal (78 FR 63903, October 25, 2013) and the FAA's response to each comment.

### **Request to Base Compliance Time on AD Issue Date**

American Airlines (AAL) requested that paragraph (f) of the proposed AD (78 FR 63903, October 25, 2013) be revised to allow operators to comply with Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, within 36 months after the AD effective date. AAL stated that Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, was issued with a compliance time of 36 months from the original release of the service bulletin. AAL explained that after Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, was released, Boeing accomplished a service bulletin validation on another operator's airplane and found many discrepancies and errors with the work instructions and parts required, resulting in Revision 1 of Boeing Service Bulletin 777-27A0078, dated April 1, 2013. AAL stated that due to the issues still existing in the work instructions for Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, and a long lead time on the part kits, operators will be unable to accomplish Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, by the compliance time given without severe disruption of schedules.

We agree with the commenter's request. We agree that the compliance time should be based on the effective date of this final rule and not on the original issue date of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013. We had already included this information in the proposed AD (78 FR 63903, October 25, 2013), paragraph (j)(1) of this AD, as reiterated from the proposed AD, states that where Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, specifies a compliance time after the "Original issue date of this service bulletin," this AD requires compliance within the specified compliance time after the "effective date of this AD". Therefore, no change is required for this AD in this regard.

### **Request to Revise Repetitive Inspection Interval**

Boeing requested that we revise paragraph (g) of the proposed AD (78 FR 63903, October 25, 2013) to extend the compliance time for the repetitive inspections from 48 months to 1,500 days in order to allow operators to do these inspections at the same time as other inspections which are on a 1,500-day cycle mandated by the Model 777 airplane maintenance planning document. Boeing stated that current guidance on developing a compliance recommendation requires that airline maintenance inspection intervals (AMII) be taken into account when determining the compliance time. Boeing explained that for the Model 777 series airplanes, these AMII are given in calendar days and cycles, and that deviation from the AMII requires justification. Boeing stated that since no such justification exists, if the compliance time were to be determined today, it would be 1,500 days (4 maintenance years) instead of 48 months (4 calendar years).

We agree with the commenter's request. The requested change to the repetitive inspection interval meets the compliance time that has been determined for addressing the identified unsafe condition, while taking into account fleet-established maintenance intervals. We have revised paragraph (g) of this AD to specify a repetitive inspection interval of 1,500 days.

### **Request to Clarify Inspection Method**

United Airlines (UAL) requested that we revise paragraph (g) of the proposed AD (78 FR 63903, October 25, 2013), which specifies to do a detailed inspection using a borescope if the horizontal stabilizer tips have not been removed. UAL requested that we clarify the required action by including "as applicable" or by noting that this borescope inspection applies only to bonding jumper number 10.

We infer that the commenter refers to the work instructions in Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, that identify the option of using a borescope to inspect bonding jumper 10 if the horizontal stabilizer tips have not been removed. We agree with the commenter's request. The use of a borescope is intended for bonding jumper 10, and not for all bonding jumpers. We have revised paragraph (g) of this AD to specify doing the detailed inspection using a borescope if the horizontal stabilizer tips have not been removed.

#### **Revisions Made to this Final Rule**

We have revised the Costs of Compliance in this final rule to specify only the mandated actions, since we have no definitive data for the on-condition costs. We have also revised the concurrent cost estimates by including the estimated number of airplanes on which those actions must be accomplished.

We have revised paragraph (h)(1) of this AD to clarify that the optional terminating action for Option 2 includes replacing bonding jumpers.

#### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (78 FR 63903, October 25, 2013) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (78 FR 63903, October 25, 2013).

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

## Costs of Compliance

We estimate that this AD affects 131 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection of bonding jumpers (131 airplanes)	Up to 67 work-hours X \$85 per hour = Up to \$5,695 per inspection cycle	\$0	Up to \$5,695 per inspection cycle	Up to \$746,045 per inspection cycle
Concurrent action; Boeing Service Bulletin 777-55A0010, Revision 1, dated April 17, 2001 (34 airplanes)	66 work-hours X \$85 per hour = \$5,610	\$2,668	\$8,278	\$281,452
Concurrent action; Boeing Service Bulletin 777-55A0014, Revision 1, dated April 1, 2010 (84 airplanes)	21 work-hours X \$85 per hour = \$1,785	\$1,235	\$3,020	\$253,680

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions and optional terminating actions specified in this AD.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.



## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2014-11-03 **The Boeing Company**: Amendment 39-17853; Docket No. FAA-2013-0867; Directorate Identifier 2013-NM-115-AD.

#### **(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

This AD affects AD 2012-08-13, Amendment 39-17030 (77 FR 24357, April 24, 2012).

#### **(c) Applicability**

This AD applies to The Boeing Company Model 777-200, -200LR, -300, and -300ER series airplanes, certificated in any category, as identified in Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013.

**(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight Controls.

**(e) Unsafe Condition**

This AD was prompted by reports of severe corrosion on bonding jumpers installed on the flight control surfaces. We are issuing this AD to detect and correct corrosion on bonding jumpers installed on the flight control surfaces, which, in the event of a lightning strike, could damage the actuator control electronics (ACEs) and result in the loss of the ability to command individual flight control surfaces or cause uncommanded motion of individual flight control surfaces.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Bonding Jumper or Bracket Inspection**

At the applicable compliance time specified in paragraph 1.E., “Compliance,” of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, except as specified in paragraphs (j)(1) and (j)(2) of this AD: Do a general visual inspection or a detailed inspection, including a borescopic inspection as applicable, for corrosion, sealant disbond, and insufficient sealant coverage of bonding jumpers; and do all applicable corrective actions; in accordance with Option 1, and Option 2, as applicable, of the Accomplishment Instructions of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, except as required by paragraph (j)(3) of this AD. Do a detailed inspection using a borescope of bonding jumper 10 if the horizontal stabilizer tips have not been removed. Do all applicable corrective actions before further flight. Repeat the inspection thereafter at intervals not to exceed 1,500 days. Doing the actions specified in paragraph (h)(1) of this AD on a bonding jumper terminates the repetitive inspections required by this paragraph. Doing the actions specified in paragraph (h)(2) of this AD terminates repetitive inspections required by this paragraph for that bonding jumper.

#### **(h) Optional Terminating Actions**

(1) Doing a general visual inspection or a detailed inspection for corrosion damage of the bonding jumper brackets, replacing bonding jumpers, and all applicable corrective actions; in accordance with Option 2 of the Accomplishment Instructions of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013; terminates the repetitive inspections required by paragraph (g) of this AD. Do all applicable corrective actions before further flight.

(2) The repetitive inspections required by paragraph (g) of this AD are not required on the bonding jumpers that were removed, inspected, and replaced with new bonding jumpers and new fasteners using the new category 2 fay sealed direct standard ground stud installation method, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013.

#### **(i) Prior and Concurrent Requirements**

(1) For Group 1 airplanes, as identified in Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013: Prior to or concurrently with accomplishing the actions required by paragraph (g) of this AD, install new bonding jumpers, and do resistance measurements of the modified installation to verify resistance is within the limits specified in the Accomplishment Instructions of Boeing Service Bulletin 777-55A0010, Revision 1, dated April 17, 2001. Do the actions in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-55A0010, Revision 1, dated April 17, 2001.

Note 1 to paragraph (i)(1) of this AD: AD 2012-08-13, Amendment 39-17030 (77 FR 24357, April 24, 2012), refers to Boeing Service Bulletin 777-55A0010, Revision 1, dated April 17, 2001, as the appropriate source of service information for accomplishing the actions specified in paragraph (h) of AD 2012-08-13.

(2) For Group 1 and Group 2 airplanes, as identified in Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013: Prior to or concurrently with accomplishing the actions required by paragraph (g) of this AD, replace certain single-tabbed bonding brackets in the airplane empennage with two-tabbed bonding brackets, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-55A0014, Revision 1, dated April 1, 2010.

Note 2 to paragraph (i)(2) of this AD: AD 2012-08-13, Amendment 39-17030 (77 FR 24357, April 24, 2012), refers to Boeing Service Bulletin 777-55A0014, Revision 1, dated April 1, 2010, as the appropriate source of service information for accomplishing the actions specified in paragraph (g) of AD 2012-08-13.

**(j) Exceptions to Service Information**

(1) Where Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, specifies a compliance time after the “Original issue date of this service bulletin,” this AD requires compliance within the specified compliance time after the effective date of this AD.

(2) The “Condition” column in paragraph 1.E., “Compliance,” of Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, refers to a condition as of the “Original Issue date of this service bulletin.” This AD applies to the corresponding condition as of the effective date of this AD.

(3) If any corrosion damage is found during any inspection required by this AD, and Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013, specifies to contact Boeing for appropriate action: Before further flight, repair the corrosion damage using a method approved in accordance with the procedures specified in paragraph (l) of this AD.

**(k) Credit for Previous Actions**

(1) For Groups 1, 2, and 6 through 9, as identified in Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009: This paragraph provides credit for actions required by paragraph (g) of this AD and the actions specified in paragraph (h) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, which is not incorporated by reference in this AD.

(2) For Groups 3 through 5, as identified in Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009: This paragraph provides credit for actions required by paragraph (g) of this AD, except for the actions required for bonding jumpers 21 and 22, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, which is not incorporated by reference in this AD. If a review of the airplane's maintenance records positively determines that bonding jumpers 21 and 22 were inspected before the effective date of this AD in accordance with Option 1 of Work Package 3 of the Accomplishment Instructions of Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, this paragraph provides credit for the actions required by paragraph (g) of this AD for the inspected bonding jumpers.

(3) For Groups 3 through 5, as identified in Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009: This paragraph provides credit for actions specified in paragraph (h) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009, which is not incorporated by reference in this AD; provided that a review of the airplane's maintenance records positively determines that bonding jumpers 21 and 22 were replaced in accordance with Option 2 of Work Package 3 of the Accomplishment Instructions of Boeing Alert Service Bulletin 777-27A0078, dated September 10, 2009,

or were replaced using the new Category 2 faying sealed direct ground stud installation method.

(4) This paragraph provides credit for actions required by paragraph (i)(1) of this AD if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-55A0010, dated October 26, 2000, which is not incorporated by reference in this AD.

(5) This paragraph provides credit for actions required by paragraph (i)(2) of this AD if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-55A0014, dated May 8, 2008, which is not incorporated by reference in this AD.

**(l) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (m)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your Principal Maintenance Inspector or Principal Avionics Inspector, as appropriate, or lacking a principal inspector, your local Flight Standards District Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(m) Related Information**

(1) For more information about this AD, contact Georgios Roussos, Aerospace Engineer, Systems and Equipment Branch, ANM-130S, Seattle Aircraft Certification Office, FAA, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6482; fax: 425-917-6590; email: Georgios.Roussos@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference may be viewed at the addresses specified in paragraphs (n)(3) and (n)(4) of this AD.

**(n) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Service Bulletin 777-27A0078, Revision 1, dated April 1, 2013.

(ii) Boeing Service Bulletin 777-55A0010, Revision 1, dated April 17, 2001.

(iii) Boeing Service Bulletin 777-55A0014, Revision 1, dated April 1, 2010.

(3) For Boeing service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>.

(4) You may view this service information at FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:  
<http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on May 14, 2014.

Michael J. Kaszycki,  
Acting Manager  
Transport Airplane Directorate,  
Aircraft Certification Service.

[FR Doc. 2014-15435 Filed 07/14/2014 at 8:45 am; Publication Date: 07/15/2014]